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# USING PERSISTENCE AS A NOVEL INDICATOR OF APATHY AS A NON-MOTOR SYMPTOM IN PARKINSON'S DISEASE.

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Parkinson's Disease (PD) consists of both motor and non-motor symptoms. The purpose of the current study is to examine changes in motor behavior in a zebrafish PD model and to identify a novel measure (persistence) of non-motor symptoms such as apathy. Adult zebrafish are randomly selected and separated into control (CON) and treated (MPTP). The treated fish will be exposed to MPTP (0.8 mM for 2 minutes) and allowed to recover. After recovery, fish are placed into the persistence tank that has a clear plexiglass barrier at the top water line to prevent access to the food. After 3-minutes of acclimation behavior is recorded (NF) for 1 minute, the food stimulus is presented and behavior recorded again (FD). The process is repeated until all fish are recorded. Videos are processed with ImageJ and Excel. Total distance (TD) and average velocity (AV) is used to examine motor symptoms, whereas persistence (PS) is used to understand non-motor symptoms. PS is measured as the amount of time spent near the plexiglass barrier. Greater time at the barrier indicates greater PS and thus less apathy. It is hypothesized that exposure to MPTP will reduce AV, TD, and PS reflecting PD-like symptoms. Preliminary results in CON show no difference for AV and TD in the NF and FD conditions, however after presentation of the food PS increased (NF_PS = 333.30 ms; FD_PS = 3,141.35 ms). That value shows how long the zebrafish was in the region of interest for a longer period of time when food is present. After exposure to MPTP, results are expected to show a decrease in the TD and AV, reflecting a reduction in motor-system function. An expected decrease in PS will be reflected as a change in the non-motor behaviors. The preliminary results show that how much and how fast the fish swim is not affected by the food, however PS increased. With this result we show that PS can be used to determine the level of interest in zebrafish, allowing us to measure apathy as a non-motor symptom in early stages of PD.